TECHNICAL SCHEDULE IV

INSTRUMENTATION & CONTROL EQUIPMENT
(To be completed by the Tenderer)

4.1 100 MLD STP at Byaramanagala

Note: The bidder shall provide complete information along with product brochures in the schedule as required under the bid specifications for technical qualification**.**

Sr. No.	Description	Unit	Particulars
4.1.1	**Level Measuring System**		
(a)	**Ultrasonic Type** Make and Model Beam Angle Country of Origin		
(b)	**Capacitance Type** Make and Model Country of Origin		
(c)	**Conductivity Type** Make and Model No. of electrode Country of Origin		
(d)	**Float type Level Gauge** Make and Model Float Material Country of Origin		
4.1.2	**Digital Level Display Unit**		
(a) (b)	Make and Model Country of Origin		
4.1.3	**Pressure Gauges**		
(a)	Make and Model		

Sr. No.	Description	Unit	Particulars
(b) (c)	Range Country of Origin	kg/cm^2	
4.1.4	**Pressure Transmitter with local indication**		
(a)	Make and Model		
(b) (c)	Range Country of Origin	kg/cm^2	
4.1.5	**Digital Pressure Indicator**		
(a)	Make and Model		
(b) (c)	Repeat Transmission output Country of Origin		
4.1.6	**Pressure Switches**		
(a)	Range		
(b)	Make and Model		
(c)	Country of Origin		
4.1.7	**Flow Measuring System**		
(a)	**Electromagnetic Flow meter**		
	Make and Model		
	Accuracy		
(b)	**Flow integrator and display unit** Make and Model Country of Origin		
(c)	**Thermal Mass Flow meter**		

Sr. No.	Description	Unit	Particulars
	Make and Model Accuracy Flow integrator and Display Unit Country of Origin		
(d)	**Open Channel Flow Measuring System** Make / Model Type Quantity Accuracy Country of Origin		
4.1.8	**Weight Indicator cum Transmitter** Make / Model Type Quantity Accuracy Country of Origin		
4.1.9	**Instrument Junction Boxes** Make and Model Instrument enclosures Country of Origin		
4.1.10	**Instrument Enclosures** Make and Model Instrument enclosures Country of Origin		
4.1.11	**Local Push button Station** Make and Model Country of Origin		

Sr. No.	Description	Unit	Particulars
4.1.12	**Control & Automation System:** (Hot Standby CPU) Programmable Logic Controller For STP		
(a)	Make and Model: Hot standby Offered at STP: Country of Origin:		
(b)	(i) Digital Inputs (ii) Model No. (iii) Type (iv) Country of origin (v) Series similar to CPU.	Nos.	
(c)	(i) Digital outputs (ii) Model No (iii) Type (iv) Country of origin (v) Series similar to CPU.	Nos.	
(d)	(i) Analog Inputs (ii) Model No (iii) Type (iv) Country of origin (v) Series similar to CPU.	Nos.	
(e)	(i) Analog outputs (ii) Model No (iii) Type (iv) Country of origin (v) Series similar to CPU.	Nos.	
4.1.13	**Memory**		
4.1.14	**Redundant Power Supply**		

Sr. No.	Description	Unit	Particulars
	Modules, (i) Make (ii) Model No. (iii) Country of Origin		
4.1.15	**Communication Modules** (i) Make (ii) Model No (iii) Country of Origin		
4.1.16	Portable Industrial Programming Unit (Laptop-16" screen) loaded with licensed latest Windows operating system, PLC programming software & SCADA software, MS Office, Antivirus software, with all accessories required to connect to PLC and to monitor & control the plant if required, etc)		
4.1.17	**Interface/Integration Redundant GPRS communication equipment with STP** (i) Make & Model: (ii) Country of Origin: (iii) Redundancy offered:		
4.1.18	**HMI (Minimum 16") for PLC & RIO Panels**		
(a)	Software Details: Version No:		
(b)	Hardware Details (i) CPU Configuration (ii) Make /Model (iii) Touch Screen Color (iv) Monitor Configuration		

Sr. No.	Description	Unit	Particulars
	(v) Country of Origin		
(c)	Printers (inclusive of All in one printer) - OFFLINE - ONLINE - Country of Origin	Nos.	
4.1.19	SCADA & Historian Software Packages SCADA software: Version: Country of Origin: Historian Software: Version: Country of Origin: PLC Programming Software: Version: FBD Supported & Included: Make & Origin(Contractor shall name Make & Origin without fail)		
4.1.20	**SCADA Server Hardware Details** CPU Configuration Make /Model Monitor size Monitor make Make Country of origin		
4.1.21	**SCADA clients/Operator machines Hardware Details** (i) CPU Configuration		

Sr. No.	Description	Unit	Particulars
	(ii) Make /Model (i) Monitor size (ii) Monitor make (iv) Country of Origin		
4.1.22	**MIS Software:** (i) Make: (ii) Details of software:		
4.1.23	**SCADA System Console** (i) Make (i) Model (ii) Country of Origin		
4.1.24	**Large screen display, 65" LED Screen**		
	Make and Model:		
	Dimension/Size:		
	Video switcher /Controller Considered:		
	Country of Origin:		
4.1.25	**Temperature Gauge** (a) Make and Model (b) Accuracy (c) Country of Origin		
4.1.26	**Temperature Transmitter** (a) Make and Model (b) Accuracy (c) Type (d) Country of Origin		

Sr. No.	Description	Unit	Particulars
4.1.27	Ethernet Managed Switch Printers (i) Make /Model (ii) No of Ports (iii) Country of Origin		
4.1.28	CCTV Workstation Details (i) CPU Configuration (ii) Make /Model (iii) Monitor make (iv) Monitor Size (iv) Country of Origin		
4.1.29	**Uninterruptable Power Supply for STP** Make and Model Capacity Backup time considered for STP & ISPS. Indicate separately for each. No. of batteries Country of Origin:		
4.1.30	**Surge Protection Devices** (a) Surge Rating (b) Make/Model (c) Country of Origin:	kA	
4.1.31	**Instrumentation and Control Cables** (a) Make (b) No. of Cores		

Sr. No.	Description	Unit	Particulars
	(c) Type (d) Country of Origin (e) Armoured cables are considered:		
4.1.32	**Cable trays** Make: Type: Country of Origin:		
4.1.33	**Instrument Enclosures** Make: IP Rating : Country of Origin:		
4.1.34	**Fire alarm detection & Suppression system** (a) Make & model: (b) Country of Origin:		
4.1.35	AC distribution board for Instrumentation & Control and Telemetry System (a) Make and Model (b) Pre-fabricated (c) Country of Origin		
4.1.36	**Lab Instruments** Make and model (List all lab equipment with make & model) **LIMS software:** Make and model: Confirm LIMS software connected to SCADA system: Country of Origin		
4.1.37	**All Weather Refrigerated Auto Sampler**		

Sr. No.	Description	Unit	Particulars
	Make and model Technical Details Country of Origin		
4.1.38	**Online Real Time Water Quality Systems at Inlet & Outlet of STP** Make and model Technical Details Country of Origin		
4.1.39	**Online Analytical Instrumentation**		
(a)	**Turbidity Measurement system** Make and model Technical Details Country of Origin		
(b)	**pH Measurement system** Make and model Technical Details Country of Origin		
(c)	**Chlorine Measurement system** Make and model Technical Details Country of Origin		
(d)	**Dissolved Oxygen Measurement system** Make and model Technical Details Country of Origin		
(e)	**Suspended Solids Measurement system**		

Sr. No.	Description	Unit	Particulars
	Make and model Technical Details Country of Origin		
(f)	**TDS Measurement system** Make and model Technical Details Country of Origin		
(g)	**ORP Measurement system** Make and model Technical Details Country of Origin		
4.1.40	**CCTV SURVILLANCE SYSTEMS:** Make: Model: Country of Origin: TECHNICAL DETAILS:		
4.1.41	Blower system Instruments		
(a)	Air Flow Measurement System (i) Make and Model (ii) Measuring Range (iii) Accuracy (iv) Principle of measurement		
(b)	Air Pressure Measurement System (i) Make and Model (ii) Measuring Range (iii) Accuracy (iv) Principle of measurement		

Sr. No.	Description	Unit	Particulars
(c)	Air Temperature Measurement System (i) Make and Model (ii) Measuring Range (iii) Accuracy (iv) Principle of measurement		
4.1.42	**Level Switches** (i) Make and Model (ii) Type (iii) Range (iv) Accuracy		
4.1.43	**Instrumentation Earthing** (i) Make and Model (ii) Type of Material		
4.1.44	Alarm Annunciators (i) Make and Model (ii) No. of Windows (iii) Accuracy		

Note: All Equipment shall be make as per Bid requirements and any alternate make shall qualify the alternate make criteria clause in the bid document.